GUIDELINES ON

GOOD LABELLING PRACTICE FOR PESTICIDES

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

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COMMUNITY HEALTH CELL
47/1, First Floor, St. Marks Road,
Bangalore - 560 001.

ABSTRACT

The aim of these guidelines is to assist people preparing pesticide labels to communicate the essential elements of the safe and effective use of pesticides to the end user by means of a simple, clear standard of labelling.

These guidelines provide specific advice on label design for both industry personnel and Government Authorities concerned with pesticide registration.

The surest way of minimizing accidental poisoning by pesticides is by educating and training all those who handle these products from manufacture to final use.

As man often does not achieve the level of knowledge that will enable him to cope, unaided, with complex matters such as use of pesticides, the accent on education must always be on practicality, even if this falls short of theoretical perfection (4).

When preparing labels it is essential to ensure that the audience can understand the message, to determine how much detail is necessary to achieve the desired objective of motivating the user to use pesticides properly and take reasonable and practical precautions when handling them.

A practical education programme should be aimed at users of pesticides and extension officers working for government agencies, chemical companies or distributorships. Personnel working either within the government or industry systems are not always aware of all the problems associated with labelling and the safe use of pesticides. Nor do they necessarily have a practical approach to problem solving, even though technical knowledge is often most readily available to them.

In developing countries, communication of this concept may be hampered by language difficulties and literacy levels, and a general lack of understanding. A well planned education programme, with follow-up to reinforce and teach new pesticides users, is necessary to reach all audiences and achieve the intended purpose of communicating the basic concepts for safe and effective use of pesticides.

Visual aids of various types are an essential part of communication, growing in importance as the level of literacy or word vocabulary declines (4).

Education programmes can take the form of films, slides and lecture notes. The use of radio or television provides a significant medium to reinforce the philosophy that the label is provided for the express purpose of imparting relevant, clear, concise information on how to use a product, and how to protect the user and the environment from any untoward mishaps.

Included in these guidelines are example label layouts for each WHO hazard classification, together with step-by-step instructions explaining all aspects of setting out label information.

These guidelines should be read in conjunction with the FAO document entitled "Guidelines and Model Schemes for the Establishment of National Organizations for the Registration and Control of Pesticides".

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SECTION 1

1. INTRODUCTION

1.1 The information presented on the container label is the main means by which users can be informed about the safe and effective use of pesticides.

Knowledge is a powerful weapon with which to combat ignorance, and this document provides concise, pratically orientated, easily understood recommendations for preparation of labels to assist the user to achieve the best use of pesticides in a manner safe to himself, the crop and the environment, thereby maximizing his potential for agricultural knowledge and development.

As the greatest potential for misuse or abuse exists in countries where national economic development is dependent largely on agricultural development, where the use of pesticides for both agricultural and public health is steadily growing to meet the need for control of pest, weed and disease problems, there is a great need for clear directions, easily understood by the least educated user.

Industry and government personnel must exercise and encourage the greatest care in the handling and use of pesticides, and the concept promoted by this document must be implemented at the highest level, for without positive action, any attempt to promote these guidelines will be ineffectual.

Existing statistics indicate that many fatal and non-fatal accidental poisonings occur each year. These could be reduced if users could understand and were prepared to carry out the recommendations and instructions set out on pesticide labels.

The need for a consistently high standard of communication through pesticide labels should therefore be obvious.

1.2 It is of particular concern that users of pesticides in developing countries are often at a disadvantage technologically and educationally.

In many countries, villagers may grow their crops on fairly small areas, for their own use or for sale, and their ability to undertsand label instructions for mixing, applying and storing pesticides may be seriously limited by lack of education.

The amount of pesticide used is small but application may be frequent. Products have to be effective and cheap. Such products are often of high toxicity. Low concentration products are prefereable for safety, but very often only highly concentrated commericial formulations are available.

1.3 Therefore, it must be continually emphasized that label instructions, particularly technical information, must be communicated in a clear, concise way. The safe, effective use of pesticides will ultimately depend on the user's understanding of complete, clear statements on the label, and more importantly on his ability and willingness to read or interpret this information correctly.

> THE IMPORTANCE OF THE CONTAINER LABEL AND ITS INFORMATION CANNOT BE OVER-EMPHASIZED. IT PROVIDES THE ONLY METHOD OF DIRECT TRANSMISSION OF TECHNICAL INFORMATION, INSTRUCTIONS AND ADVICE FROM THE SUPPLIER, WITH HIS RESEARCH AND DEVELOPMENT BACKING, TO THE PURCHASER AND USER OF THE PRODUCT.

1.4 For years the appeal to pesticide users to READ THE LABEL has been a regular feature of campaigns for the safe and effective use of pesticides. The importance of this message is now greater than ever.

Assuming the user has the necessary reading skills, the factors affecting readability are:

- the personal importance and interest of the message to the user;
- the impact of layout, design, print size and use of colours;
- choice of suitable words, phrases and sentence length;
- the skill of translators and editors to effectively select and present essential information.

Production of written information involves integration of decisions relating not only to language but also to layout, and this must be coupled with an approach which will accommodate users who have little or no literacy skills (1).

Instructions in both pictures and language must be easily understood by the prospective user. If care is not taken in their design, readers may have difficulty grasping what the writer intends. Alternatively, readers may think that they have understood the intended meaning, but may find it difficult to relate this understanding to the use of the product (1).

There is no reason why clear, concise labelling cannot be achieved. These guidelines provide help in achieving this objective.

2. OBSTACLES TO UNDERSTANDING

2.1 With increasing international use of many pesticides, accurate translation of product labels into many different languages has become necessary, in some cases into two or more languages on one container label. Even so, some users remain unable to read the label's language, indeed any written language.

Pictures or visual symbols could serve as a communication medium; but unless explained and taught, such symbols may have little meaning to users.

The increasing demand for more information on how to use pesticides and the need for dual language or symbols on labels, creates serious competition for space in label design.

Lengthy label text may reduce the user's willingness to attempt to read the label. As the amount of information on many labels is necessarily extensive, it must be presented clearly and concisely to emphasize the correct use of the product. Wherever possible, labels should be laid out in clearly headed, distinct blocks, emphasizing key elements by means of coloured print or background.

2.2 Greater emphasis must be placed on clear and meaningful translation, particularly where multi-lingual labels are required.

3. WHAT IS A LABEL

3.1 A label is the written, printed or graphic material firmly attached to a container. Leaflets should be referred to on the label if they accompany a container. Labels must be resistent to normal wear and tear encountered in transport, storage and use. These very important requirements apply equally to the print on the label and the material on which the information is printed.

Several years of storage may elapse between manufacture and final use of the product, and deterioration may occur. Without a complete and legible label, a container of pesticide is likely to present a serious hazard.

3.2 The label must inform about:

(a) what is in the container and the hazard it represents;

(b) what safety precautions are necessary when handling and using the product and first-aid treatment where appropriate;

(c) how, when and where to use the product in the container;

(d) how to mix the product;

(e) how to clean up equiment, and how to store or dispose of unwanted surplus product;

(f) what legal responsibilities apply;

(g) the name and address of the manufacturer, distributor or agent; registration approval.

(h) the compatability with other products where appropriate;

(i) date of manufacture/formulation.

The trend to try to include every possible eventuality and legal disclaimers on a label leads to confusion and illegibility.

3.3 It was stated at the outset that the pesticide label should be the means of achieving a consistently high standard of communication from supplier to purchase. For this it is essential that all the information on the label should be accurate, and free from any statements which cannot be substantiated, or which could mislead a purchaser or user.

3.4 Authorities approving labels should therefore not only examine the text and design of the label, but also request information on the physical properties of the proposed label or labelled container.

4. WHAT IS IN THE CONTAINER

4.1 Hazard

A 'focal-point' must be established on the main panel of the label, clearly identifying the hazard of the product in the container.

Communicating information on hazard can best be achieved by using the currently accepted pictorial representations indicating toxicity, flammability, explosion, oxidation, irritancy and corrosiveness.

The internationally accepted symbols used to indicate various physical properties (see Appendix 3) have been combined with the very short words 'VERY TOXIC', 'TOXIC' and 'HARMFUL' as recommended by WHO for Formulations in classes Ia, Ib and II to highlight the hazard.

Colour coding may be used and should be based on toxicity of the product. (see para 8.8, page 17).

To give continuity to this system, the word 'CAUTION' has been added for Class III category products (full details are set out in Table 1 and examples of label layouts in Section 2).

The statement 'KEEP LOCKED UP OUT OF REACH OF CHILDREN' must be added to the main panel under the hazard symbols, to reinforce the need to keep pesticides in a safe place.

4.2 Identity and Contents

- The "descriptive name" (trade or commercial name of the product, together with a description of use) e.g. 'SMITHS HERBICIDE'.

- The names of all active ingredients in the product, using common names approved by the International Standards Organization or by a local standards association where no ISO name has been recommended, together with the minimum guaranteed amount of each active constituent present expressed as follows:

  (a) Solids, Viscous liquids, Aerosols and Volatile liquids:
  gram per kilogram (g/kg)

  (b) Other liquids:
  gram per litre (g/L)

  The amount of each active constituent present must be clearly described, e.g.:

  400 g/L of 2,4-D as sodium salt

  NOT
  400 g/L sodium salt of 2,4-D.

  The active ingredient statement should be placed as near as possible to the descriptive name.

- Where a solvent is present, the concentration should be stated if the solvent significantly contributes either to use hazard, OR flammability of the product, and appropriate standard symbols which indicate flammability (Appendix 3) and phrases which indicate user hazard (Appendix 2) must be included on the label.

- A brief statement summarizing the use of the product, e.g. 'FOR CONTROL OF POST-EMERGENT ANNUAL BROADLEAF WEEDS IN CEREALS".

- The net weight or volume of the product in the container.

- Name and address of manufacturer, distributor or agent. The person or company responsible for registration of the product in the country concerned.

5. HOW, WHEN AND WHERE TO USE THE PRODUCT

5.1 Directions for Use

The directions for use on the label must clearly indicate how, when and where the product can be legally, effectively and safely used with maximum efficiency and minimum risk. This information may be repeated and expanded in separate technical or promotional literature or label leaflets. However, even if leaflets are used, the LABEL ON EVERY CONTAINER OR OUTER PACKAGE MUST ALWAYS SUPPLY THE ESSENTIAL INSTRUCTIONS LIKELY TO BE NEEDED AT THE TIME OF USE, OR HIGHLIGHT THE NECESSITY TO READ AN ATTACHED LEAFLET BEFORE USE.

Information about the recommended uses of the product should be clear and specific, using names, terms or descriptions which will accurately inform the user as to the pests, weeds and diseases controlled.

Directions for use must include:

(a) Any warnings intended to prevent incorrect or inappropriate use of the product, e.g.

"Do not use on sandy soils"
"Apply only at the 2-5 leaf stage"
"Do not apply when rain is imminent"

(b) Crop, situation, pests, weeds or diseases for which the product has been officially approved and registered.

(c) Application rates and comments critical to the effective use of the product on each crop, situation, pest, weed or disease, including timing and method of application.

(d) A statement, where required, of the period which should elapse between last application of the product

AND

harvest of plant products;
grazing of treated areas;
slaughter of treated animals for food;
feeding produce to domestic animals;
saving, offering for sale or using produce such as milk, honey or eggs for human use;
seeding or planting of subsequent crops;

OR

the withdrawal period for treated feed to avoid unacceptable residues in animal products. (1).

This is known as the "withholding period" or "pre-harvest interval", standard statements for which are set out in Appendix 2.1.

5.2 General Instructions for Use

Included here is information essential to the proper use of the product in all the circumstances listed in the Directions for Use.

(a) Practical advice must be included on preparing, mixing and applying the product, storage and disposal of surplus or unwanted chemical.

(b) Compatability of the product with other products where this is appropriate.

(c) Any special recommendations on storage conditions for the container and product.

(d) Date of formulation (expiry date might be necessary in the case of products that may deteriorate under likely storage conditions).

(e) Identification number of manufacturing lot or batch.

(f) Official registration, approval or reference number given to a product may have to included, if such a requirement exists for a particular country.

(g) Warnings (standard phrases) for good agricultural practice should be included where appropriate. These are set out in Appendix 2.2.

(h) Warnings on steps to take to prevent ill effects on beneficial insects such as bees, and on beneficial organisms which may be utilized in an integrated pest management programme.

5.3 Safety Precautions

The standard statements designed to clearly inform the user how to handle the product with a minimum of hazard are set out in Appendix 1.2.

The introductory sentences should be set out in bold capital letters to emphasize the nature of the product, what to do and what to wear when handling the concentrate or working with the product, and what to do if contamination occurs.

5.4 First-aid Instructions and Advice to Doctors

These statements should indicate what to do in case of poisoning. Standard basic statements are set out in Appendix 1.3. Appropriate special additional information regarding symptoms, special tests and antidotal measures are to be added where necessary for particular products.

5.5 Legal Responsibilities

Certain products or active constituents may come within the scope of national legislation concerned with control and safe use of hazardous or poisonous substances. The label may therefore have to state this, and also include any other legislative requirement, e.g.

"THE REQUIREMENTS OF THE ...(ACT)... APPLY TO THIS PRODUCT".

Regulations may also require additional information on transport by road, rail, sea or air. Reference should be made to the appropriate local legislation. Suitable reference documents covering international codes for transport of dangerous goods, by land, sea and air, should be consulted in this regard.

SECTION 2

6. USING THE GUIDELINE

6.1 This section deals in detail with the application of the principles and concepts considered in Section 1, to the design, layout and checking of individual labels.

Examples of label layouts are included first to provide a graphic illustration of these principles. Each example represents one of the several ways considered suitable for label layout.

The examples include:

- one panel label (page 8)
- two panel label (page 9)
- three panel label (page 10)
- label leaflet (page 11)

These are followed by detailed consideration of each element of the label.

Throughout the text, reference is made to Appendices. These contain standard symbols and statements, as follows:

Appendix 1 - Hazard and Safety

1.1 Hazard Symbols and Statements.
1.2 Safety Statements.
1.3 First-aid Instructions and Advice to Doctors.

Appendix 2 - Agricultural Practice

2.1 Withholding Period Statements.
2.2 Statements for Good Agricultural Practice.

Appendix 3 - Physical Properties

6.2 It is recommended that close study be first made of the examples of labels to clearly establish the application of the principles of a good label. Clarification of the layout and text can then be found in the text that follows.

6.3 Label Examples

ONE PANEL LABEL

CAUTION

KEEP LOCKED UP OUT OF REACH OF CHILDREN

SMITH'S FUNGICIDE

Contains 15g/litre of lime in the form of an aqueous concentrate

FOR CONTROL OF BROWN ROT ON PEACHES

DIRECTIONS FOR USE - Add 7 litres of SMITHS FUNGICIDE per 100 litres of water and apply from 3 weeks after petal fall until 3 weeks before harvest.

WITHOLDING PERIOD - No limits. Avoid excessive deposits on fruit.

COMPATIBILITY - Can be combined with winter oil and sulphur but do not mix with any other pesticides without first checking with a reliable compatibility chart.

PRECAUTIONS - SMITH'S FUNGICIDE is not a scheduled poison, but avoid eye and skin contact. Do not contaminate any water supply. Wash hands and exposed skin before meals and after work.

STORAGE - Corrosive. Store drums in a dry place, away from feedstuffs and out of reach of children.

Registered Pursuant to the Control of Pesticides Act,
Registered Number xxxx

Batch No. ..... Net Contents - 20 litres

SMITH INDUSTRIES
Smith Street
Laughing Springs

DIRECTIONS FOR USE -

MIXING - Mix to required quantity of SMITH'S INSECTICIDE with a small quantity of water then add the premix to the spray not while filling, ensuring the agitators are in motion.

APPLICATION RATE - The rates suggested are for high volume spraying to run-off. For concentrate spraying adjust rates accordingly.

Pipfruit - codling moth, leaf roller, scale crawlers - apply 75 - 100 g/100 litres of water, the first application at petal fall (when bees are removed) repeating application at 2 - 3 weekly intervals until 2 weeks prior to harvest.

Stonefruit - leaf roller - apply 75 - 100g/100 litres of water making the first application at petal fall and repeat at 2 - 3 weekly intervals until prior to harvest. Check witholding periods below.

WITHOLDING PERIODS - The following minimum time intervals must be observed between the last application and harvest.

Pipfruit	14 days	Apricots - 21 days
Peaches	21 days	Other Stonefruit - 14 days

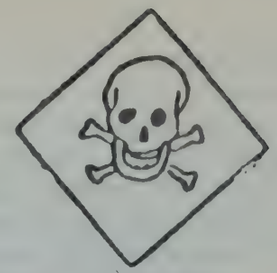
COMPATIBILITY - Compatible with most fungicides and insecticides except those which are highly alkaline such as Bordeaux, lime sulphur and lime.

Registered Pursuant to the Control of Pesticides Act
Registered Number xxxx

Batch No. ..... Net Contents - 2kg

SMITH INDUSTRIES
Smith Street
Laughing Springs

VERY TOXIC



KEEP LOCKED UP OUT OF REACH OF CHILDREN

SMITH'S INSECTICIDE

Contains 500g/kg orgophos in the form of a wettable powder.

FOR CONTROL OF CERTAIN INSECT PESTS OF FRUIT.

WARNING - This material is extremely dangerous if swallowed, inhaled or absorbed through the skin.

PRECAUTIONS - Keep tightly closed in original labelled container in a safe place away from food, children and animals. Wear rubber glasses, overalls and respirator during mixing and application. Wash hands and exposed skin before eating, drinking or smoking and wash protective clothing daily after work. Obtain a supply of atropine and keep it handy while using SMITH'S INSECTICIDE. Empty containers must be washed out and destroyed safely. Harmful to fish - do not contaminate lakes, rivers, ponds or streams with waste chemical or used container.
Toxic to bees - Spray must not contact plants in flower if they are likely to be visited by bees.

SYMPTOMS OF POISONING - Headache, nausea, giddiness, blurred vision, vomiting, contraction of pupils, diarrhoea.

FIRST AID - If swallowed give a glass or two of water and cause vomiting by putting a finger down the throat. Repeat until vomit fluid is clear in appearance. Do not cause vomiting if the patient is unconsicous or convulsing. If symptoms of poisoning are occuring give on atropine tablet every ½ hour for the first hour then one every ½ hour.

SPILLAGE - If spillage occurs damp down any dust with a little water, then sweep up and bury.

TWO PANEL LABEL

PRECAUTIONS - Keep out of reach of children. Avoid inhalation of spray mist or contact with the concentrate. If skin or eyes are contaminated, wash immediately and thoroughly with plenty of water. Empty containers must be washed out, buried or burned in a safe place.

WEEDS CONTROLLED -

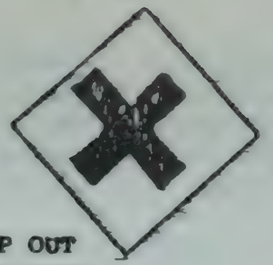
Susceptible : Black nightshade, chamomile, fathen, fumitory redroot, shepherds purse.

Moderately susceptible : Cornbind, wireweed, Californian thistle.

Resistant : Cleavers, docks and most deep rooting weeds.

COMPATIBILITY - Do not mix with emulsifiable concentrates of insecticides or other herbicides.

HARMFUL



KEEP LOCKED UP OUT
OF REACH OF CHILDREN

SMITH'S WEEDKILLER

Contains 700g/kg lethachem in the form of a wettable powder

SELECTIVE HERBICIDE FOR WEED CONTROL IN PEAS, WHEAT AND POTATOES

Registered Pursuant to the Control of Pesticides Act.

Registered Number xxxxx

Batch No. ..... Net Contents 1.5kg

SMITH INDUSTRIES
Smith Street
Laughing Springs

DIRECTION FOR USE -

Peas - Post emergence - Apply 1 - 1.25 kg SMITH'S WEEDKILLER per hectare in 300-600 litres, when the weeds are at the cotyledon to 2 true leaf stage and the crop is no more than 10 cm high. Do not apply beyond this stage.

Wheat - Post emergence - Apply 1 kg SMITH'S WEEDKILLER in 300 - 400 litres of water from the 5 leaf stage to the shot blade stage. Application should be made as early as possible. Where Californian thistles are a problem delay until maximum emergence has taken place.

Potatoes - Pre-emergence. Apply 2 - 2.5 kg SMITH'S WEEDKILLER in 350-450 litres of water before potatoes emerge.

CROP ROTATION - Residues from the use of SMITH'S WEEDKILLER may adversely affect certain susceptible crops. Do not plant crops other than those recommended for treatment on the label within 3 months of applying SMITH'S WEEDKILLER.

THREE PANEL LABEL

LEAFLET LABEL

TOXIC

KEEP LOCKED UP OUT OF REACH OF CHILDREN

SMITH'S WOODY WEEDKILLER

Contains 400g/litre of woodweed in the form of an emulsifiable concentrate.

A HERBICIDE FOR THE CONTROL OF WOODY WEEDS.

Registered Pursuant to the Control of Pesticides Act.

Registered Number xxx

Batch No. ..... Net Contents 2 litres

SMITH INDUSTRIES
Smith Street
Laughing Springs

WARNING - This substance may be harmful if swallowed, inhaled or absorbed through the skin.

PRECAUTIONS - Keep tightly closed in original labelled container. Keep containers in a safe place, away from food, children and animals. Destroy this container when empty. Wash hands and face before meals and after work. Wear waterproof gloves when mixing and applying, and avoid contact with skin and inhalation of spray mist.

FIRST AID - If swallowed give water to dilute. Do not cause vomiting unless medical treatment is delayed more than an hour. Take patient to hospital without delay.

DIRECTION FOR USE - For full directions for use refer to the leaflet attached to the side of this container. READ THE ATTACHED LEAFLET BEFORE USING THIS PRODUCT.

COMMUNITY HEALTH CELL
47/1, (First Floor) St. Marks Road,
Bangalore - 560 001

7. ARRANGING LABEL INFORMATION

7.1 Labels may have either one, two or three, or more panels. Key information set out in these panels should be tabulated wherever possible and allocated more space or larger type face, as the user will not bother to read instructions in very small print.

Prominance should be given to the expression of active ingredients, uses, safety precautions and hazard symbols. Print size and colour usage are detailed in paras. 8.5 and 8.8.

In brief, wherever the container and contents go, the key information on what the product is, its intended uses, safety precautions and indication of hazard goes with it.

The following layouts, incorporating paragraph reference to detailed explanation of headings used, should be studied in conjunction with the examples illustrated at the start of this section.

7.2 A One Panel Label

This layout should only be used where the uses of the product are limited, and Directions For Use, General Instructions, Safety Precautions and First-Aid require little detail. It is usually suitable for Class III products only.

	Refer Para.
Product Name	4.2
Active Ingredient Statement	4.2
Solvent Statement (if required)	4.2
Summary of Uses	4.2
Directions for Use	5.1
Withholding Period	5.1
General Instructions for Use	5.2
Warning Phrases, Statements for Good Agricultural Practice	5.2
Safety Precautions	5.3
First-Aid Instructions and Advice to Doctors(if required)	5.4
Legal Responsibilities	5.5
Net Contents	4.2
Name & Address of Manufacturer, Distributor or Agent	4.2
Date of Formulation Batch No., etc.	5.2

Refer to sample label on page 8.

7.3 A Two Panel Label

MAIN PANEL		ANCILLARY PANEL	
	Refer Para.		Refer Para.
Hazard Symbols	4.1	Directions for Use	5.1
Product Name	4.2	Crop Rotation (if required)	5.1
Active Ingredient Statement	4.2	Withholding Period (if required)	5.1
Solvent Statement (if required)	4.2	Warning Phrases and Statements for good Agricultural Practice	5.2
Summary of Uses	4.2	Registration Number, Date of Formulation, Batch No., etc.	5.2
Safety Precautions	5.3	Net Contents	4.2
First-aid Instructions and Advice to Doctors (if required)	5.4	Legal Responsibilities	5.5
		Name and Address of Manufacturer, Distributor or Agent	4.2

Refer to Sample Label on page 9.

7.4 Three Panel Label

The label may be expanded into a second ancillary panel when the product use information is extensive

ANCILLARY PANEL 1		MAIN PANEL		ANCILLARY PANEL 2	
	Refer Para.		Refer Para.		Refer Para.
Directions for Use	5.1	Hazard Symbols	4.1	Safety Precautions	5.3
Crop Rotation (if required)	5.1	Product Name	4.2	Warning Phrases, Statement for Good Agricultural Practice	5.2
Withholding Period (if required)	5.1	Active Ingredient Statement	4.2	First-aid Instructions and Advice to Doctors (if required)	5.4
		Solvent Statement (if required)	4.2		
		Summary of Uses	4.2		
		Registration No., Date of Formulation, Batch No., etc.	5.2		
		Net Content	4.2		
		Legal Responsibilities	5.5		
		Name and Address of Manufacturer, Distributor or Agent	4.2		

Refer to sample label on page 10.

7.5 A Label Leaflet

When the amount of detail concerning the uses of a product is considerable, space available on a container may be insufficient. Rather than make the label illegible by reducing print size and cramping the information, label information may be presented on the container and on a separate leaflet. The leaflet must be securely attached to the container, and the material on which the leaflet is printed must be at least as strong and durable as the container label.

When a leaflet is used, the following statement MUST appear in bold capital letters on the MAIN PANEL of the container label:

"READ THE ATTACHED LEAFLET BEFORE USING THIS PRODUCT"

Refer to sample label on page 11.

Hazard symbols, product name, safety precautions, first-aid instructions and the name and address of manufacturer, distributor or agent must appear on the leaflet as well as the container, so the user can easily match the two separate components of the label.

The leaflet must carry the information as set out below:

	Refer Para.
Hazard Symbols	4.1
Product Name	4.2
Directions for Use	5.1
Withholding Period	5.1
Safety Precautions	5.3
First-aid Instructions and Advice to Doctors	5.4
Name and Address on Manufacturer, Distributor or Agent	4.2
Formulation Date Batch No., etc.	5.2

7.6 Labelling Pre-measured Packs

When a product is packed in 2 or more pre-measured quantities in an outer container, additional labelling is required.

The outer container must be fully labelled in accordance with the principles of these guidelines. The following statement, in bold capital letters, must be included on the MAIN PANEL:

"CONTAINS ... MEASURE PACKS WHICH IT IS ILLEGAL TO SELL SEPARATELY"

The inner packs must be labelled as set out below and also include the following statements in bold capital letters:

	Refer Para.
Hazard Symbols	4.1
Product Name	4.2
Active Ingredient Statement	4.2
Solvent Statement (if required)	4.2
Summary of Uses	4.2
Legal Responsibilities	5.5
Name and Address of manufacturer, distributor or agent	4.2
Formulation Date Batch No., etc.	5.2
Net Weight	4.2

7.7 Additional Information

In addition to the information set out in the examples above, the manufacturer or distributor may wish to add further items to the label such as idemnity clauses or patent ownership. However, great care must be taken to ensure key information is not cramped, reduced in print size, or overwhelmed by other information not essential to the needs of the user.

8. CHECKING THE LABEL

8.1 Label Layout must be Clear

Wherever possible the label should be set out in clearly headed distinct blocks making deliberate but not excessive use of colour in print or background in order to gain attention. Clear space around blocks of statements and symbols attracts attention.

8.2 Use Clear Concise Wording

Choice of words, phrases and other printed communication should, wherever possible, be suited to the less experienced user, and should aim at maximum clarity in a minimum of words.

As an example, the following "critical comments" appeared on a Tobacco Desuckering label:

"CRITICAL COMMENTS

> "Apply either before or after topping at the button to early flower stage. Best results are usually obtained by spraying the tobacco within a week, removing any suckers that were missed. If you top the tobacco plants before spraying, remove any suckers over 25 cm in length as you top and apply (product) one or two days after topping. Because (product) is a contact type agent, it is necessary to straighten any plants that are leaning so that the emulsion flows down the stalk evenly and contacts each sucker."

The comments are unnecessarily wordy and not clear. The "critical comments" could be better rewritten as follows:

> "Top plants at button to early flower stage. Remove suckers over 25 cm long. Straighten any leaning plants to ensure full spray contact. Spray within one or two days after topping."

8.3 Dual Language Labels must be Complete and Translations Precise

Where the label is required to be printed in more than one language, each language must have its own complete label. Translations must convey the same meaning in each language. Only in extremely rare circumstances will there be sufficient space on a single label for two complete sets of information in separate languages. This shortage of space can be overcome by having the primary language on the container label, with other languages on an attached label leaflet.

8.4 Print the Text Horizontally

Label information should be readable horizontally when the container is in its normal standing position. Horizontal and vertical printing used together will cause confusion.

8.5 Use Print Size Which Allows Legibility

The label may frequently have to be read by people who have poor eyesight or limited reading skills or under adverse lighting conditions. Use the largest print possible, taking into consideration the maximum label area and the amount of information required for that area. This should avoid the extremes of either illegibly small or inconveniently large print.

Print size of 8-point (2 mm) with 2-point leaded is the preferred minimum. Larger print should be used for important information such as safety precautions, warning phrases and hazard symbols. User tests show that 11-point (2.7 mm) is the print size most preferred.

The terms "point" and "leaded" are standard world-wide printing industry terms and denote print size and line spacing.

Print size should not be less than 6-point (1.5 mm) with 1-point leading (or local equivalent) as an absolute minimum. This size should only be used if unavoidable and then NOT for warnings, safety precautions or hazard symbols.

8.6 Use Clear Type Face

The type face selected should be very clear, and without decorations or oddities. Italic type face should not be used except for scientific names.

8.7 Capture Attention by Emphasizing

Hazard statements such as **VERY TOXIC, TOXIC, HARMFUL** and **CAUTION, SUMMARY OF USES** and headings for **DIRECTIONS FOR USE** should be set in **HEAVY BOLD CAPITAL LETTERS**, or their local equivalents.

The main leading words of the standard safety precaution statements should also be emphasized in capital letters.

8.8 Use Colour to Highlight

The pictorial hazard symbols set out in Appendix 1 should appear conspicuously on the label. They should cover a prominent area of the main label and must never be less than 10 mm x 10 mm.

Colour contrast, or brightness of printed matter and background can be a valuable tool for increasing legibility and user impact. Listed below are the most effective colour contrasts:

- black on yellow
- green on white
- red on white
- white on blue
- black on white

The background should be clear and not have patterns which reduce legibility.

To maintain contrast use strong colours, however do not make the print too solid, otherwise the contrast is lost.

Red is almost universally recognized as an attention and warning colour. Therefore RED should be used only for hazard symbols, warning phrases, safety precautions and first-aid instructions and for colour band for products in WHO Hazard Classifications I.

Colour coding should be based on the hazard of the formulation and should be linked to the "WHO Recommended Classification of Pesticides by Hazard" as follows:

WHO Class Ia - red) pantone red 199-C
WHO Class Ib - red)
WHO Class II - yellow (pantone yellow-C)
WHO Class III - blue (pantone blue 293-C)
WHO Class III (List of technical products unlikely to present hazard in normal use (Table 5 of WHO Classification))
- green (pantone green 347-C)

A band at the bottom of the label, occupying not less than 15% of the label area should be colour coded as outlined above.

The RED colouring used should be a non-fading specification.

Red should NOT be used as a background colour.

8.9 Terms to be Avoided

To achieve a consistently high standard of communication from supplier to purchaser and user using pesticide labels, it is essential that all label information is accurate and free from statements which cannot be substantiated, or which could mislead.

Do not use words which describe the product as "SAFE", "HARMLESS", "NON-TOXIC", 'NON-POISONOUS" or "NON-INJURIOUS" in respect of risks to humans or animals, either with or without qualifying phrases such as "when used as directed".

Do not use superlatives such as "the best", "most effective", "superior control" or "unrivaled".

9. ADJUSTING LABELLING FOR SPECIAL PURPOSES

The principles set out in Section 1 apply to all labelling. Some minor variations may be necessary to suit some special circumstances.

9.1 Home Garden & Domestic Products (Including Aerosol Containers)

In many countries home garden and small scale use products are deliberately kept, as far as possible, within the toxicity classification III. This means that, whilst they are effective, the risk of injury to the user is reduced. Any high toxicity compounds used should be presented in a dilute form which brings them into the Class III rating.

(a) Because these products are only used in small quantities, the packaging is small by comparison with other larger commercial packs, therefore label space is more limited.

(b) Labels may be divided between the container and the outer package or an accompanying label leaflet.

(c) Convenient hand-held pressurized aerosol cans are designed for immediate use in situations where particle size and application rates are less important than convenience and instant readiness. Labels on pressurized aerosol cans must include any nationally adopted warnings concerning flammability, storage away from heat, safe use and disposal for the prevention of explosion, fire or other physical hazards as the product contains a propellent gas or liquid.

(d) The use of low toxicity and low concentrations of active constitutents mean there is no need for any warning of major toxicity hazards. The main potential problems are of local effects on eyes, skin and respiratory tract if excessive contact occurs.

9.2 Products Used in Confined Spaces

Products used to control pests in food storage practice or for protection of stored produce, public health and hygiene, and in glasshouse use, usually involve pesticides being used in enclosed or confined spaces where ventilation is restricted, and the distance between operator, equipment and target is minimal. Frequently these areas are occupied and the safety and comfort of people and animals during and after treatment is important. Foodstuffs are also likely to be stored, or used, or meals prepared in these areas.

In glasshouses, produce is likely to be harvested frequently; e.g. daily harvest of cucurbits and tomatoes.

The use of pesticides in these areas may require extra precautions for respiratory or body protection, ventilation, protection of foodstuffs, and prevention of injury to animals or complaints from occupants of treated areas.

Suitable phrases to cover such situations are set out in Appendix 2.1.

9.3 Chemically Treated Seeds

Labelling of chemically treated seed creates problems as the standard seedbag or sack is not a pesticide container and only carries information on the nature, weight and perhaps origin of the contents.

On occasions chemically treated seeds have been accidentally use for human or animal food with serious or fatal consequences. Problems are likely to occur when:

(a) products in Class Ia or Ib are used to treat seed;

(b) the treated seed is not stored separately from untreated seed;

(c) a warning dye has not been used on treated seed;

(d) local food shortages or an excess of treated seed lead people to use this as a food source.

When the seedbag or sack contains chemically treated seed, warning phrases should be irremovably applied to the outside of the container in the language or languages of the area where the seed is to be used.

The company, organization or individual treating the seed must bear the responsibility for labelling the seedbag or sack.

The label on the container of the seed dressing material being used should state what must be done to correctly label every container of treated seed.

Standard phrases for labelling treated seed are set out in Appendix 2.2.

9.4 Application by Air

Information on use of the product by air should be set out clearly in the general instructions section of the label. Any special authorization or legislative requirements should also be included.

Several countries have specific regulations or codes of practice for aerial application of pesticides. Restrictions may be placed on the chemicals that may be applied by air, or the locations where aerial application may be undertaken.

The standard safety precaution phrases for ground application should be used for the protection of the ground team. Additional phrases may be required as appropriate. Comprehensive instructions for pilot safety should be included when available.

SECTION 3

10. UNDERSTANDING PRODUCT TOXICITY AND HAZARD

It is vitally important that the label warns the purchaser and the user of the toxicity and hazards of the product, and what precautions need to be taken when handling and using the product.

10.1 Toxicity

Toxicity is the inherent capacity of a substance to produce injury or death. The term used LD50 is merely a convenient term which is a statistical estimate of a chemical dose which will kill 50% of the test animals under stated conditions. The figures designating LD50 Values express the lethal dose in milligrams per kilogram bodyweight of the test animal. The lower the LD50 value the higher the toxicity.

10.2 Hazard

Hazard is a function of two primary variables, toxicity and exposure; with the potential that injury may result from the exposure to a substance in a formulated product. The phrases in Appendix 1 indicate the hazard to the user or the environment.

The oral and dermal LD50 values for a formulation can be obtained from either the manufacturer of a formulation or extrapolated from WHO guidelines published literature on the active ingredient. From the latter figures, it is possible to establish the appropriate classification for the formulation using the WHO system.

Establish if a hazard exists from other ingredients

The available data should be checked to establish if the formulated product contains a solvent, and if it comes into the category of either being irritant, explosive, corrosive, flammable, highly flammable or oxidizing. Definitions for these terms are set out in Appendix 3.

Potential Hazard from proposed use

When satisfied that an adequate assessment has been made of all the potentially hazardous components of the product, the next step is to assess what hazard may arise from the proposed method, purposes and scale of use.

(a) Information on potential hazard may come from previous experience, or from commercial data already in existence, as this is usually included as part of the toxicological and biological data provided for a product or compound.

(b) It is important to consider how the user, workers cultivating or harvesting treated crops, members of the public, domestic animals and livestock, fish, beneficial insects, birds, wildlife, plants (other than those being treated), nearby waterways and germination or growth of subsequent crops may be potentially affected by use of a particular product.

(c) The withholding period required between last application and harvest, referred to in Appendix 2 can be derived from information on residue persistence and dietary toxicity.

10.3 Determining Hazard Symbols and Statements

Once the information gathered is complete, a decision can be made on the appropriate hazard symbols, warning phrases and safety precautions, withholding periods and first-aid instructions to be used. At this stage, a check should be made of similar existing labels to ensure that recommendations are consistent. Reference to Appendix 1 provides:

(a) standard hazard symbols;

(b) standard phrases amplifying the hazard symbols;

(c) standard safety precaution statements;

(d) first-aid instructions and advice to doctors;

(e) withholding period statements;

(f) warning phrases and standard phrases for good agricultural practice;

A label for an extremely hazardous, very toxic Class Ia product used on food crops will require information from all the categories above, whereas a product in Class III not used on food crops will only require a minimal number of the statements set out in Appendix 1.

10.4 Contribution of Solvent to Product Hazard

The hazard of solvents for liquid pesticides depends on a number of factors, among these are volatility and mammalian toxicity which have an important influence on product safety.

Oral and dermal toxicity of the solvent in the formulated product

(a) If the oral and dermal toxicity of the solvent is greater than that of the active ingredient or other components of the commercially formulated product or if the solvent significantly increases the hazard of the formulation, this will be obvious in the acute toxicity studies on the formulation and the LD50 values. Care must be exercised in establishing if these values were indeed gained from studies on the formulated product and that they are not an extrapolation from LD50's of technical grade material only.

(b) If there is any doubt as to which values have been used, request further information from the applicant.

(c) An assessment can then be made of the toxicity of the solvent in relation to other components of the formulated product. The results of this assessment must be taken into consideration when finalizing the product's hazard classification.

Inhalation hazard from volatile solvents in formulated product

Vapour hazard of solvents in commercially formulated products increases in direct ratio to the volatility of the solvent, and to temperatures of air or treated surfaces, spillage when mixing indoors or when containers are left open. If the solvent's inhalation toxicity value (LD50) and the concentration result in a higher classification of hazard than the product's oral or dermal toxicity, the higher classification and appropriate warnings of risk should be used.

(a) Preparation or application under normal conditions:
Inhalation hazard from volatile solvents in commercially formulated products is unlikely to cause problems under normal open air

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handling conditions. Natural air movement or movement of machinery or operators will dilute any vapour to harmless levels. A faint breeze of 1 km/hour moves air at 17 m/minute, equivalent to 1 metre movement between breaths.

(b) Preparation or application indoors or in poorly ventilated areas: If vapour concentrations in confined or poorly ventilated areas become high when preparing or applying the product, toxic solvents may cause an additional hazard to that normally experienced when handling the product.

Expressing Solvent Hazard

When appropriate the label should:

(a) state the name and concentratin of the solvent used on the main panel, below the expression of active ingredient;

(b) indicate appropriate safety precaution statements.

11. CLASSIFICATION OF PRODUCTS BY TOXICITY AND HAZARD

11.1 The WHO Classification System

In 1975 the World Health Organization published a proposed classification system based on the health hazards to users of formulated pesticides. The system ascribed these pesticides to four categories, namely: "Extremely Hazardous", "Highly Hazardous", "Moderately Hazardous" and Slightly Hazardous".

The adoption of this pesticide classification system is strongly advocated by FAO wherever a pesticide hazard classification or product registration scheme is being introduced or modified.

11.2 How the System Works

This system categorizes formulated products primarily by their acute oral and dermal toxicity to experimental animals, specifically acute oral and dermal LD50 values in the rat. This is because animal studies give the only reliable information on the total toxic effects of formulations and any toxic interactions occurring between active ingredients, solvents, formulants and other substances present.

If, however, at any time toxicological or other information comes to hand signifying a greater or lesser hazard to users than that based solely on LD50 values, the category ascribed to that particular product may be amended accordingly.

Similarly, if the product's dermal toxicity signifies a greater hazard than the oral toxicity, the more restrictive hazard category should be adopted.

Liquid preparations are, theoretically and in practice, more likely to increase spread and persistency of contamination on skin and clothing, and cause more rapid absorption into the circulatory system after skin or oral absorption than will occur following exposure to solid preparations.

The WHO system therefore classifies liquid preparations as being four (4) times more hazardous than corresponding solid preparations. This is reflected in the values used to differentiate the various hazard classes. See Table 1, on the following page.

12. DERMAL TOXICITY - LD50 VALUES

According to WHO, the risk of acute poisoning from careful use of pesticides is negligible from preparations with an oral LD50 of more than 2,000 mg/kg (for solids) and 3,000 mg/kg (for liquid).

However it must be remembered that the LD50 values for dermal toxocity must be based on actual tests on the formulated product not on predictions made from tests on the technical grade active ingredient. Consideration needs to be given to the possible harmful effect of solvents and other ingredients present, as these may be toxic enough to make a higher hazard classification necessary.

12.1 WHO Hazard Classification - Acute LD50 Values of Formulated Products

TABLE 1

Classification & Signal Wording	Pictorial Reference for each class	Acute LD50(rat) mg/kg of bodyweight			
		ORAL		DERMAL	
		Solid	Liquid	Solid	Liquid
Ia Extremely Hazardous "VERY TOXIC"		5 or less	20 or less	10 or less	40 or less
Ib Highly Hazardous "TOXIC"		5-50	20-200	10-100	40-400
II Moderately Hazardous "HARMFUL"		5-500	200-2000	100-1000	400-4000
III Slightly Hazardous "CAUTION"	-------	Over 500	Over 2000	Over 1000	Over 4000

12.2 Calculation of LD50 Values where Data is not Available

Where experimental LD50 data are not available, estimated values may have to be used. These can be estimated from the LD50 values of the unformulated technical grade active ingreditent published by WHO and FAO by means of the following formula:

Formula for estimating LD50 values for a product containing one active constituent:

The estimated LD50 is calculated from the formula: $\frac{T \times 100}{C}$

where T = the acute oral LD50 of the active ingredient in mg/kg;
C = the % concentration of the active ingredient in the unformulated technical product.

These estimated values hold reasonably true for solid preparations but usually give a low estimate of the toxicity of liquids.

Formula for estimating LD50 values for a product containing two or more active ingredients

It is not possible to include classification of mixtures of pesticides in the guidelines; many of these are marketed with varying concentrations of active constituents. There are three possible approaches to the classification of mixtures, in order of preference:

(a) require the formulator to obtain reliable acute oral and dermal toxicity data for rats on the actual mixture as marketed; or

(b) classify the formulation according to the most hazardous constituent of the mixture as if that constituent was present in the same concentration as the total concentration of all active constituents; or

(c) apply the formula $\frac{C_A+C_B+C_Z=100}{\overline{T_A}\ \overline{T_B}\ \overline{T_Z}\ \overline{T_m}}$

where C = the % concentrations of constituents A, B ... Z in the mixture;
where T = the oral LD50 values of constituents A, B ... Z;
where T_m = the oral LD50 value of the mixture.

The formula can also be used for dermal toxicities provided that this information is available on the same species for all constituents. The use of this formula does not take into account any potentiation or protective phenomena.

13. INHALATION TOXICITY (LC50) VALUES

The WHO hazard classification (Table 1), does not include inhalation toxicity LC50 values, as under most conditions of use outdoors absorption is more usually via skin or oral routes than by inhalation. The hazard of inhalation exposure is, however, important when products liberate gas or vapour or have fine particles as in the case of aerosols, mists, fogs or smokes. Many of the products used as fumigants are of high hazard, and recommended exposure limits have been adopted by national authorities in many countries.

APPENDIX 1 - HAZARD AND SAFETY

INTRODUCTION

Proposals for appropriate hazard symbols, safety precautions, first-aid instructions, advice to doctors and warning phrases are initially drawn up by companies or persons submitting labels for approval, and are based on knowledge of the chemical, its formulations, uses, toxicity and potential hazards. The final decision concerning the acceptance of these proposals is, however, the responsibility of the registering authority. These guidelines provide standard symbols and statements to be used by both companies and registration authorities.

The statements used must convey understanding of potential hazard in a clear, concise way and in a minimum of words. Other phrases or variations should not be needed, except in special circumstances not adequately covered by this document. If other phrases are considered necessary, they should be submitted to the FAO for consideration and possible incorporation into this document.

A1.1. Hazard Symbols and Statements

To be placed at the top of the MAIN panel of the label.

CLASS I

VERY TOXIC

V E R Y T O X I C

CLASS IB

TOXIC

T O X I C

CLASS II

HARMFUL

H A R M F U L

CLASS III

CAUTION

C A U T I O N

"KEEP LOCKED UP OUT OF REACH OF CHILDREN"

This statement should be included on the main panel of each label, immediately below the hazard word and symbol required for each product.

A1.2 Safety Statements

The statements set out below in CAPITAL letters should appear on the label in capital letters, followed by the appropriate phrase or phrases in lower case letters.

THE PRODUCT IS:

harmful
poisonous
- if breathed
- if swallowed
- if in contact with the skin

irritating to eyes
- skin
- respiratory system

WHEN WORKING WITH OR PREPARING PRODUCT

AVOID:
- dust
- smoke
- vapour
- spray mist
- gas
- contact with mouth, skin and eyes

DO NOT smoke, eat or drink

WEAR
- suitable protective clothing
- gloves
- apron
- overalls
- footwear
- goggles
- faceshield
- headgear
- dust mask
- respirator

IF CONTAMINATION OCCURS:

Take off heavily splashed or contaminated clothing

Wash: hands, eyes and exposed skin thoroughly with plenty of water

Repeated minor exposure may have a cumulative poisoning effect

AFTER USE:

Wash: hands and exposed skin before eating, drinking or smoking

overalls, boots, hat and other protective clothing thoroughly, especially inside of gloves.

A1.3 First-aid Instructions and Advice to Doctors

Mandatory for WHO Class Ia and Ib products;
Optional for Class II and III products.

"If skin or eyes are contaminated, wash immediately and thoroughly with plenty of water."

"Symptoms include ..... If you have any of these during or after use or accidental contamination, seek medical advice immediately. Stop work."

"If skin has been splashed remove contaminated clothing, wash skin well, and avoid exertion. Get medical attention. Show the label if possible."

"Symptoms may include ..... (state possible symptoms and effects)"

"Confirmation of diagnosis is by ..... (state special tests recommended)"

"Specific treatment recommended ..... (state any special antidotal measures)"

"Other measures of treatment or precaution ....."

"Further information is available from .....(give address and phone number of distributor, manufacturer or Poisons Centre, as most suitable)"

APPENDIX 2 - AGRICULTURAL PRACTICE

A2.1 Withholding Period Statements

"DO NOT apply later than ..... days/weeks before harvest"

"Do not treat/apply to stock later than ..... days before slaughter"

"Dangerous/harmful to livestock. Keep out livestock of treated areas for at least ..... hours/days after last treatment"

"Keep unprotected persons out of treated areas for at least ..... days after last treatment"

"Keep animals/children out of treated areas for ..... days/hours after last treatment"

"DO NOT use treated produce for human consumption for ..... hours/days after last treatment"

"DO NOT process into food for ..... days after last treatment"

"DO NOT use milk for human consumption for ..... hours following treatment"

"For use on following crops only, with stated minimum interval between last application and harvesting"

"Ventilate treated areas/buildings for ..... hours before re-occupation"

A2.2 Statements and Phrases for Good Agricultural Practice

Animals and the Environment

"Dangerous/harmful to domestic animals and wildlife"

"Keep stock out of treated areas until all the weeds are dead"

"Dangerous/harmful to fish; do not contaminate lakes, rivers, ponds or streams with waste chemical or used container"

Food and Animal Feedstuffs

"DO NOT apply to food or food crops"

"DO NOT apply to surfaces coming into contact with food"

"Keep away from food, drink and animal feeding stuffs"

Treated Seed

"This seed has been chemically treated - do not handle unnecessarily"

"DO NOT re-use sacks for food or animal feed"

"DO NOT use treated seed for food or animal feed"

Care, Use and Disposal of Containers and Baits

"Keep tightly closed in original labelled container"

"Do not re-use this container for any other purpose"

"Do not decant contents into unlabelled containers EXCEPT for immediate use"

"Keep container in a safe place away from food, children and animals"

"Remove used container and dispose of safely"

"Empty containers must be washed out, buried or burned in a safe place"

"Mark baits 'POISON' and place out of reach of children and animals"

Disposal of baits and spillage

"Remove all baits and burn dead pests after treatment is completed"

"Remove any spillage and bury in a safe place"

Care of equipment, area to be treated and occupants of treated areas

"Keep application equipment in good condition, free from leaks and external contamination"

"Do not use where food could be contaminated"

"Remove or cover food before treatement"

"Before treatment remove livestock, birds, fish, domestic pets"

"Do not apply directly to livestock, feed or water tanks"

"Before treatment, cover or remove any equipment used with food or drink"

"Do not apply to clothing, bedding or fabrics"

"Warn occupants against placing food onto treated surfaces"

"Keep animals/birds/domestic pets/children away from premises or materials being fumigated or ventilated after fumigation"

APPENDIX 3 - PHYSICAL PROPERTIES

Set out below are definitions, pictorial symbols and standard statements which indicate physical properties which may relate to the product label being drafted.

The symbols must be in a diamond, printed in the colours specified, and the dimensions must be not less than one tenth (1/10) the area of the main panel of the label and never be less than 10 mm x 10 mm.

DEFINITIONS:

Corrosive: Substances which may on contact with living tissues destroy them.

Explosive: Substances which may explode under the effects of flames, or are more sensitive to shocks or friction than dinitrobenzene.

Flammable: Substances with a flash point of 21-55°C; and aerosol dispensers containing over 45% by weight or over 250g of flammable components, i.e. gases flammable in air at normal pressure, or liquids of flash point less than 100°C.

Highly Flammable: Substances which either -

(a) may ignite spontaneously in air at ambient temperature;

(b) may ignite readily and continue to burn after brief contact with a source of ignition;

(c) have a flash point BELOW 21°C;

(d) are gases flammable in air at normal pressure;

(e) give off dangerous amounts of flammable gas in contact with water or damp air.

Irritant: Non-corrosive substances which, through contact with skin or mucous membranes, can cause inflammation.

Oxidizing: Substances which may give rise to highly exothermic reaction in contact with oxidizable substances, particularly flammable substances.

CORROSIVE

Black symbol on a yellow or orange background for upper half and white print on a black background for lower half of the diamond.

The symbol indicates spilling of liquid from two glass vessels, one attacking a hand, the other metal.

EXPLOSIVE

Black symbol on a yellow or orange background.

The symbol indicates an exploding bomb.

FLAMMABLE (LIQUID)

Black symbol on red background.

The symbol indicates flammable liquids.

FLAMMABLE (SOLID)

Black symbol on white background with vertical red strips.

The symbol indicates flammable solids.

FLAMMABLE (WATER REACTIVE)

Black symbol on blue background.

The symbol indicates substances which in contact with water emit flammable gases.

HIGHLY FLAMMABLE

Black symbol on white background for upper half and red background for lower half of the diamond.

The symbol indicates substances liable to spontaneous combustion.

IRRITANT

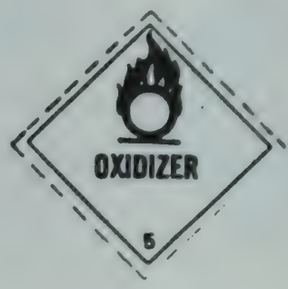
Black symbol on yellow or orange background.

This symbol indicates irritant substances.

Note: This symbol is NOT required if the TOXIC or HARMFUL symbol in Appendix 1 OR the CORROSIVE symbols are used.

OXIDIZING

Black symbol on yellow or orange background.



This symbol indicates oxidizing substances.

For further information on use of these symbols please consult local legislation on transport of hazardous goods or UN/IMCO codes.

APPENDIX 4 - SUMMARY OF RECOMMENDED LABEL COMPOSITION

KEY SUBJECT	POSITION ON LABEL A = Main Label B = Anciliary Panels C = Label Leaflet D = Pre-measured Pack * = if applicable to packaging	TYPE SIZE REQUIRED L = Large M = Medium S = Small (8 point min.) X = Emphasize by using either capitals, bold or heavy type for heading or part or whole of phrase
Hazard Symbols	A, *C and *D	LX
Product Name	A, *C and *D	LX
Active Ingredient Statement	A and *D	M
Solvent Statement (if required)	A and *D	L
Summary of Uses	A and *C	LX
Net Weight	A and *D	M
Name and Address of Manufacturer, Distributor or Agent	A and *D	M or S
Directions for Use	B and *C	M
Withholding Period	B and *C	MX or SX
General Instructions for use	B and *C	M or S
Warning Phrases and Statements for good agricultural practice	B and *C	M
Safety Precautions	B and *C	MX
First-aid Instructions and Advice to Doctors	B and *C	MX
Legal Responsibilities	B and *D	S

NOTE: WHERE A ONE PANEL LABEL IS USED, ALL THE ABOVE INFORMATION MUST BE INCLUDED.

APPENDIX 5 - FLOW CHART FOR CHECKING LABEL INFORMATION SUBMITTED FOR REGISTRATION

Define User
Who will be utilizing label information?
Determine Label Function
* to inform
* to instruct
* to gather together relevant information
* to persuade user to 'READ THE LABEL'
Determine Label Content
(what information should be included?)
Determine Contextual Constraints
* type of container
* extent of information required
* space problems
* possible use of a leaflet
* durability of label
Does the Draft Label:
* present appropriate information?
* present this clearly and concisely?
* use graphics where necessary?
* compare favourably with similar product labels on file?
Review and edit information
Evaluate
Does the label achieve its purpose?
YES
Approve draft label for final printing and registration
NO
Redraft

APPENDIX 6 - REFERENCES

1. Australia, Department of Primary Industry, Code of Practice on Labelling for Agricultural and Veterinary Chemicals. Document PB 375 Australian Government Publishing Service (Canberra, 1984).

2. Australia, Department Primary Industry, A Manual of Safe Practice in the Handling and Use of Pesticides. Document PB 377 Australian Government Publishing Service (Canberra, 1977).

3. Wright, P. "The Instructions Clearly State ... Can't People Read?" Applied Ergonomics, 12.5, 131-141, 1981.

4. Wright, P. Usability, the Criterion for Designing Writers Information. Vol.2, Processing of Visible Language. New York: Plenum Pub. Corp., 1980.

5. Copplestone, J.F. Problems in Education on the Safe Handling of Pesticides. Education and Safe Handling in Pesticide Application. Amsterdam: Elsevier Scientific Publishing Company, 1982.

6. O.E.C.D., Labelling of Chemicals Overview of International Labelling Practices. Environment Directorate. Chemicals Group and Management Committee, organization for Economic Co-operation and Development, Paris.

7. Australian Standards Association, Safety Signs for the Occupational Environment. Document AS-1319, 1983.

8. Staring, W.D.E. ARSAP's Pesticide Data Collection System in the ESCAP Region. Final Report UNIDO/RENPAF Expert Group Meeting. Chaingmai, Thailand, 8-12 March 1983.

9. Parker, C. Appropriate Herbicide Formulation and Packaging for Small Holder Tropical Farmers Practicing No-Tillage. IPPC Document, #46-B-83, February, 1983.

10. FAO, Report of the ad hoc Government Consultation on International Standardization of Pesticide Registration Requirements. Rome, 1982.

11. FAO, Guidelines for the Registration and Control of Pesticides (including a model scheme for the establishment of national organizations), Rome, 1985.

APPENDIX 7 - FURTHER READING

- Linda Reynolds, "Legibility Studies: their relevance to present day documentation methods". Journal of Documentation, 35, 4: December 1979, 307-340, Graphic Information Research Unit, Royal College of Art, London.

- "Improving the Communication Adequacy of Pesticide Labels; Sub-report 1. "The Pesticide Label Today" August 1970. College of Agriculture, University f Illinois, Urbana, USA.

- Improving the Communication Adequacy of Pesticide Labels, a Summary Report. College of Agriculture, University of Illinois, Urbana, USA. Agricultural Communications Research Report 25, January 1971.

- Bates, J.A.R. "Hazards from Inadequate or Improper Labelling and Packaging of Pesticides". FAO Plant Protection Bulletin, Plant Protection Division, FAO, Rome.

- International Labour Office, Geneva, Safe Use of Pesticides: Guidelines. Occupational Safety and Health Series, No. 38, 1977.

- WHO Geneva Guidelines to the use of the WHO recommended Classification of Pesticides by Hazard (revision 2); VBC/78.1: 1978. Reprinted also in FAO Plant Protection Bulletin 28.1, 1980; FAO, Rome.

- Council of Europe, Pesticides (5th Edition). (This publication includes a list of the addresses of national authorities of 49 countries to whom application may be made concerning registration of a new pesticide.) Strasburg, 1981.

- USA Code of Federal Regulations, 162.10, Labelling Requirements. Environmental Protection Agency (Washington, DC) Section.

- Australia Department of Primary Industry, Code of Parctice on Labelling for Agricultural and Veterinary Chemicals. Document PB 375. (Canberra, Australian Government Printing Service, 1984.)

- United Kingdom, Pesticides Safety Precautions Scheme, Pesticides Branch, Ministry of Agriculture Fisheries and Food, London, 1979.

- EEC, Council Directive on the laws, regulations and administrative provisions relating to the Classification, packaging and labelling of dangerous substances. No. L 259/12, 18 September 1979.

- EEC, Council Directive on Classification, packaging and labelling of dangerous preparations (pesticides). No. L 206/13, 26 June 1978.

- U.K. The Aerial Application Certificate, Information on requirements to be met by applicants and holders: Document CAP 414, Civil Aviation Authority, 129 Kingsway, London, June 1978.

- Richard Reynolds. "Labelling and Packaging: the formulator's responsibility to the USER, Chap. XII. INIDO, Formulation of Pesticides in Development Countries, New York: UN, 1983.

- FAO, Guidelines for Disposal of Unwanted Pesticides and Containers, Rome, 1985.

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